

Title (en)  
NOISE SUPPRESSION DEVICE AND NOISE SUPPRESSION METHOD

Title (de)  
RAUSCHUNTERDRÜCKUNGSVORRICHTUNG UND RAUSCHUNTERDRÜCKUNGSVERFAHREN

Title (fr)  
DISPOSITIF DE SUPPRESSION DE BRUIT ET PROCÉDÉ DE SUPPRESSION DE BRUIT

Publication  
**EP 2254112 A4 20120328 (EN)**

Application  
**EP 09722185 A 20090318**

Priority  
• JP 2009001224 W 20090318  
• JP 2008074691 A 20080321  
• JP 2008168835 A 20080627

Abstract (en)  
[origin: US2010262425A1] Disclosed is a noise suppression device capable of better noise suppression by means of a simpler structure and with a lighter computational load. A noise suppression device (100) has a noise suppression processor (150) to estimate the required information only from the observed information, which is the required information corrupted by noise. A correlator (154) calculates the correlation of the estimation error when the state quantity, which contains the required information, of the system at time  $n+1$  was estimated from the information until time  $n$  or time  $n+1$  for the observed information at only time  $n$ . A weighting coefficient calculator (156) uses the correlation calculated by the correlator (154) for the observed information at only time  $n$  to calculate the weighting coefficients for specifying the relationships of the optimum estimate of the state quantity at that time based on the information until time  $n+1$ , the optimum estimate of the state quantity at time  $n+1$  based on the information until time  $n$ , and the estimation error of the observed quantity including the observed information. An optimum estimate calculator (158) uses the weighting coefficients calculated by the weighting coefficient calculator (156) for the observed information only at time  $n$  to calculate the optimum estimate of the state quantity at that time based on the information until time  $n$  or time  $n+1$ .

IPC 8 full level  
**G06T 5/00** (2006.01); **G10L 21/0208** (2013.01); **G10L 21/0216** (2013.01); **G10L 21/0264** (2013.01); **G10L 25/06** (2013.01)

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**G06T 5/50** (2013.01 - EP US); **G06T 5/70** (2024.01 - EP US); **G06T 5/73** (2024.01 - EP US); **G10L 21/0208** (2013.01 - EP US);  
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**G06T 2207/20221** (2013.01 - EP US); **G10L 25/06** (2013.01 - EP US); **G10L 2021/02163** (2013.01 - EP US)

Citation (search report)  
• [X] NARI TANABE ET AL: "Noise Suppression with High Speech Quality Based on Kalman Filter", INTELLIGENT SIGNAL PROCESSING AND COMMUNICATIONS, 2006. ISPACS '06. INTERNATIONAL SYMPOSIUM ON, IEEE, PI, 1 December 2006 (2006-12-01), pages 315 - 318, XP031092433, ISBN: 978-0-7803-9732-3  
• [XD] N. TANABE; T. INOUE; K. SUEYOSHI; T. FURUKAWA; H. KUBOTA; H. MATSUE; S. TSUJII: "Robust Noise Suppression Algorithm using Kalman Filter Theory with Colored Driving Source", IEICE TECHNICAL REPORT, 1 March 2008 (2008-03-01), pages 79 - 84, XP008138071  
• [X] TANABE N ET AL: "ROBUST NOISE SUPPRESSION ALGORITHM WITH THE KALMAN FILTER THEORY FOR WHITE AND COLORED DISTURBANCE", IEICE TRANSACTIONS ON FUNDAMENTALS OF ELECTRONICS, COMMUNICATIONS AND COMPUTER SCIENCES, ENGINEERING SCIENCES SOCIETY, TOKYO, JP, vol. E91A, no. 3, 1 March 2008 (2008-03-01), pages 818 - 829, XP001513764, ISSN: 0916-8508, DOI: 10.1093/IETFEC/E91-A.3.818  
• [XP] NARI TANABE ET AL: "A Kalman Filter based Fast Noise Suppression Algorithm", DIGITAL SIGNAL PROCESSING WORKSHOP AND 5TH IEEE SIGNAL PROCESSING EDUCATION WORKSHOP, 2009. DSP/SPE 2009. IEEE 13TH, IEEE, PISCATAWAY, NJ, USA, 4 January 2009 (2009-01-04), pages 5 - 9, XP031425807, ISBN: 978-1-4244-3677-4  
• See references of WO 2009116291A1

Cited by  
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